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1270 Aberdeen St
Hawkesbury, ON
K6A 1K7
Canada

Tel (613) 632-5200
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ASAP

D212-664-101B
Job Sheet 199335



Part No: D212-664-101B

Job Qty: 1 pcs

Part Name: Fwd Crosstube - High



Part Weight: 0 lbs

Status: New

Priority: Medium

Job Created: 8/20/19

Job Tracking No:

Due Date: 8/28/19

Created By: Marie Lajeunesse

Type: SOLD

Description:

Note: D212-664-141 REV E/ IIN-D212-664 REV.J IPP RevB: as per ECN09-696 09.11.20 DD verified by:EC IPP
REV:C 11.08.08 PER ECN 11-614 DD VERF:EC IPP REV:D 14.02.12 AS PER DSI9680 REVA DD VERF:JLM
IPP REV:E 14.05.28 AS ECN14-570 DD VERF:JLM

Ship Via:

Bill of Materials

Job Routing

Op No	Operation	Qty	Start Date	Due Date	Standard		Workcenter/Supplier		Sign-off
					Setup Hrs	Run Hrs	Workcenter / Supplier	Lead Time	
110	Packaging 1 - Pick Kit	1 pcs			0.00	0.00	Packaging 1 - 1		
							Packaging 1 - 2		
							Packaging 1 - 3		
							Packaging 1 - 4		
							Packaging 1 - 5		
							Packaging 1 - 6		
							Packaging 1 - 7		
							Packaging 1 - 8		
							Packaging 1 - 9		
							Packaging 1 - 10		
							Packaging 1 - 11		
							Packaging 1 - 12		
							Packaging 1 - 13		
							Packaging 1 - 14		
							Packaging 1 - 15		
							Packaging 1 - 16		
							Packaging 1 - 17		
							Packaging 1 - 18		
							Packaging 1 - 19		
							Packaging 1 - 20		
							Packaging 1 - 21		
							Packaging 1 - 22		
							Packaging 1 - 23		
							Packaging 1 - 24		
							Packaging 1 - 25		
							Packaging 1 - 26		
							Packaging 1 - 27		
							Packaging 1 - 28		
							Packaging 1 - 29		
							Packaging 1 - 30		

N/A
19.05.20

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			Packaging 1 - 31	
			Packaging 1 - 32	
			Packaging 1 - 33	
			Packaging 1 - 34	
			Packaging 1 - 35	
			Packaging 1 - 36	
120	Crosstubes - Bend - 2 - B4B	1 pcs	0.50 0.67	Crosstubes - Bend - B4B
130	QC 15	1 pcs	0.00 0.00	QC 15 - 12
				QC 15 - 3
				QC 15 - 47
				QC 15 - 49
				QC 15 - 58
				QC 15 - 9
				QC 15 - 68
140	Crosstubes - 2 - B4B	1 pcs	0.00 1.00	Crosstubes - 1 - B4B
				Crosstubes - 2 - B4B
				Crosstubes - 3 - B4B
				Crosstubes - 4 - B4B
150	Crosstubes - 3 - B4B	1 pcs	0.00 0.50	Crosstubes - 1 - B4B
				Crosstubes - 2 - B4B
				Crosstubes - 3 - B4B
				Crosstubes - 4 - B4B
160	QC 5	1 pcs	0.00 0.00	QC 5 - 10
				QC 5 - 12
				QC 5 - 17
				QC 5 - 18
				QC 5 - 19
				QC 5 - 22
				QC 5 - 24
				QC 5 - 3
				QC 5 - 43
				QC 5 - 49
				QC 5 - 51
				QC 5 - 58
				QC 5 - 68
				QC 5 - 9
				QC 5 - 50
				QC 5 - 30
				QC 5 - 40
				QC 5 - 61
				QC 5 - 81
165	QC 7	1 pcs	0.00 0.00	QC 7 - 10
				QC 7 - 13
				QC 7 - 14
				QC 7 - 15
				QC 7 - 17
				QC 7 - 18
				QC 7 - 19
				QC 7 - 2
				QC 7 - 28
				QC 7 - 3
				QC 7 - 30
				QC 7 - 34
				QC 7 - 36
				QC 7 - 37
				QC 7 - 41
				QC 7 - 47
				QC 7 - 48
				QC 7 - 51

BB 8/21/2019

AUG 21 2019 68

BB 8/23/2019

BB 8/26/2019

AUG 26 2019 68

			QC 7 - 58	
			QC 7 - 59	
			QC 7 - 60	
			QC 7 - 9	
			QC 7 - 68	DAS AUG 26 2019 68
			QC 7 - 50	9-89
			QC 7 - 67	
			QC 7 - 40	
			QC 7 - 24	
			QC 7 - 43	
			QC 7 - 61	
			QC 7 - 81	
170 Outsource - 2 - NDT per QSI038 1 pcs	0.00 0.00	SKY002		2019-08-28
180 Packaging 2-1 - Receive - B4B 1 pcs	0.00 0.00		Packaging 2 - 1 - B4B	
			Packaging 2 - 2 - B4B	
			Packaging 2 - 3 - B4B	
			Packaging 2 - 5 - B4B	AC AUG 28 2019
			Packaging 2 - 4 - B4B	
			Packaging 2 - 6 - B4B	
			Packaging 2 - 7 - B4B	
			Packaging 2 - 8 - B4B	
			Packaging 2 - 9 - B4B	
			Packaging 2 - 10 - B4B	
			Packaging 2 - 11 - B4B	
			Packaging 2 - 12 - B4B	
			Packaging 2 - 13 - B4B	
			Packaging 2 - 14 - B4B	
			Packaging 2 - 15 - B4B	
			Packaging 2 - 16 - B4B	
			Packaging 2 - 17 - B4B	
			Packaging 2 - 18 - B4B	
			Packaging 2 - 19 - B4B	
			Packaging 2 - 20 - B4B	
			Packaging 2 - 21 - B4B	
			Packaging 2 - 22 - B4B	
			Packaging 2 - 23 - B4B	
			Packaging 2 - 24 - B4B	
			Packaging 2 - 25 - B4B	
			Packaging 2 - 26 - B4B	
			Packaging 2 - 27 - B4B	
			Packaging 2 - 28 - B4B	
			Packaging 2 - 29 - B4B	
			Packaging 2 - 30 - B4B	
			Packaging 2 - 31 - B4B	
			Packaging 2 - 32 - B4B	
			Packaging 2 - 33 - B4B	
			Packaging 2 - 34 - B4B	
			Packaging 2 - 35 - B4B	
			Packaging 2 - 36 - B4B	
190 QC 5 1 pcs	0.00 0.00		QC 5 - 10	
			QC 5 - 12	
			QC 5 - 17	
			QC 5 - 18	
			QC 5 - 19	
			QC 5 - 22	
			QC 5 - 24	
			QC 5 - 3	
			QC 5 - 43	
			QC 5 - 49	

			QC 5 - 51	
			QC 5 - 58	
			QC 5 - 68	AUG 30 2019 DAS 68 9-89
			QC 5 - 9	
			QC 5 - 50	
			QC 5 - 30	
			QC 5 - 40	
			QC 5 - 61	
			QC 5 - 81	
200 Spray Paint - 2 - B4B	1 pcs	0.00 1.00	Spray Paint - 1 - B4B	
			Spray Paint - 2 - B4B	RD 19-9-21
			Spray Paint - 3 - B4B	
			Spray Paint - 4 - B4B	
210 QC 14	1 pcs	0.00 0.00	QC 14 - 15	
			QC 14 - 2	
			QC 14 - 34	
			QC 14 - 41	
			QC 14 - 51	
			QC 14 - 58	
			QC 14 - 59	
			QC 14 - 9	
			QC 14 - 68	SEP 05 2019 DAS 68 9-89
			QC 14 - 40	
			QC 14 - 19	
			QC 14 - 43	
			QC 14 - 24	
			QC 14 - 61	
			QC 14 - 81	
220 Crosstubes - 4 - B4B	1 pcs	0.00 1.00	Crosstubes - 1 - B4B	
			Crosstubes - 2 - B4B	RD 19-9-1
			Crosstubes - 3 - B4B	
			Crosstubes - 4 - B4B	
230 QC 5	1 pcs	0.00 0.00	QC 5 - 10	
			QC 5 - 12	
			QC 5 - 17	
			QC 5 - 18	
			QC 5 - 19	
			QC 5 - 22	
			QC 5 - 24	
			QC 5 - 3	
			QC 5 - 43	
			QC 5 - 49	
			QC 5 - 51	
			QC 5 - 58	
			QC 5 - 68	SEP 05 2019 DAS 68 9-89
			QC 5 - 9	
			QC 5 - 50	
			QC 5 - 30	
			QC 5 - 40	
			QC 5 - 61	
			QC 5 - 81	
240 Packaging 3-1 - Stock - B4B	1 pcs	0.00 0.00	Packaging 3 - 1 - B4B	
			Packaging 3 - 2 - B4B	
			Packaging 3 - 3 - B4B	
			Packaging 3 - 4 - B4B	
			Packaging 3 - 5 - B4B	
			Packaging 3 - 6 - B4B	
			Packaging 3 - 7 - B4B	
			Packaging 3 - 8 - B4B	

			Packaging 3 - 9 - B4B	
			Packaging 3 - 10 - B4B	
			Packaging 3 - 11 - B4B	
			Packaging 3 - 12 - B4B	
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			Packaging 3 - 15 - B4B	
			Packaging 3 - 16 - B4B	
			Packaging 3 - 17 - B4B	
			Packaging 3 - 18 - B4B	
			Packaging 3 - 19 - B4B	
			Packaging 3 - 20 - B4B	
			Packaging 3 - 21 - B4B	
			Packaging 3 - 22 - B4B	
			Packaging 3 - 23 - B4B	
			Packaging 3 - 24 - B4B	
			Packaging 3 - 25 - B4B	
			Packaging 3 - 26 - B4B	
			Packaging 3 - 27 - B4B	
			Packaging 3 - 28 - B4B	
			Packaging 3 - 29 - B4B	
			Packaging 3 - 30 - B4B	
			Packaging 3 - 31 - B4B	
			Packaging 3 - 32 - B4B	
			Packaging 3 - 33 - B4B	
			Packaging 3 - 34 - B4B	
			Packaging 3 - 35 - B4B	
			Packaging 3 - 36 - B4B	
250 QC 4	1 pcs	0.00 0.00	QC 4 - 28	
			QC 4 - 58	
			QC 4 - 69	
			QC 4 - 9	
			QC 4 - 46	
			QC 4 - 68	
			QC 4 - 72	
			QC 4 - 74	
			QC 4 - 75	
260 Packaging 3-2 - Stock - B4B	1 pcs	0.00 0.00	Packaging 3 - 1 - B4B	
			Packaging 3 - 2 - B4B	
			Packaging 3 - 3 - B4B	
			Packaging 3 - 4 - B4B	
			Packaging 3 - 5 - B4B	
			Packaging 3 - 6 - B4B	
			Packaging 3 - 7 - B4B	
			Packaging 3 - 8 - B4B	
			Packaging 3 - 9 - B4B	
			Packaging 3 - 10 - B4B	
			Packaging 3 - 11 - B4B	
			Packaging 3 - 12 - B4B	
			Packaging 3 - 13 - B4B	
			Packaging 3 - 14 - B4B	
			Packaging 3 - 15 - B4B	
			Packaging 3 - 16 - B4B	
			Packaging 3 - 17 - B4B	
			Packaging 3 - 18 - B4B	
			Packaging 3 - 19 - B4B	
			Packaging 3 - 20 - B4B	
			Packaging 3 - 21 - B4B	
			Packaging 3 - 22 - B4B	

			Packaging 3 - 23 - B4B		
			Packaging 3 - 24 - B4B		
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			Packaging 3 - 27 - B4B		
			Packaging 3 - 28 - B4B		
			Packaging 3 - 29 - B4B		
			Packaging 3 - 30 - B4B		
			Packaging 3 - 31 - B4B		
			Packaging 3 - 32 - B4B		
			Packaging 3 - 33 - B4B		
			Packaging 3 - 34 - B4B		
			Packaging 3 - 35 - B4B		
			Packaging 3 - 36 - B4B		
265 DC - 1 - B4B	1 pcs	0.00 0.00	DC - 1 - B4B	DAS	
			DC - 2 - B4B	21	
270 QC 21 - FG	1 pcs	0.00 0.00	QC 21 - FG - 21	SEP 09 2019	
			QC 21 - FG - 70		
			QC 21 - SA - 53	DAS	

Part Op 110 - (Pick Kit)

Descriptions: 120 - (CNC Alpha 160 Bender) Bend tube as per Dwg D212-664-141 using CNC bender program 212-fw and Folio FT015

130 - (QC15- Crosstube Dimensional Check)

140 - 1-Drill pilot holes in tube as per Dwg D212-664-141 using drill Jig DT8548 & DT8549 2-Ream hole to finish size in tube as per Dwg D212-664-141 using drill Jig DT8548 & DT8549. Check dimensions between holes, both sides on both cuffs, to ensure alignment with saddle holes. 3- *** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE*** Deburr & inspect for surface damage. Repair damage within limits as per Dwg D212-664-141 4-Scribe part # and batch # using vibrating stylus as per Dwg D212-664-141

150 - (Crosstubes) ***IMMEDIATELY AFTER GRINDING*** 1- PRESSURE WASH X-TUBE INSIDE AND OUT 2- ALODINE AND ACID ETCH X-TUBE INSIDE AND OUT AS PER QSI005.

160 - (QC5- Inspect part completeness to step on W/O)

165 - (QC7-Inspect Chemical Conversion Coat)

170 - (Outsource process - NDT per QSI038 4.1) *** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE*** Liquid Penetrant Inspection as per QSI 038 Issue P/O: _____ LPI as per ASTM 1417 Level 2 Attach copy of NDT results to work order

180 - (Receive & Inspect for Damage & Mat'l Certs) *** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE*** Ensure copy of NDT results attached to work order.

190 - (QC5- Inspect part completeness to step on W/O) *** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE*** Inspect for damage & ensure results are as per Dwg D212-664-141

200 - (Spray Paint / NDT Room) *** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE*** ***VERIFY

BY _____ BATCH # TO MATCH W/O _____ ***VERIFY BY _____ PART # TO MATCH

W/O _____ ***MASK SCRIBE B# & P# AND VERIFY*** 1-Prime inside & outside crosstube as per QSI 005 4.2 BATCH: 5187203 2- After painting remove masking and apply matte clear coat per QSI005 4.2

BATCH: 5187793 3- MASK UNDERSIDE OF CROSSTUBE AS SHOWN ON DWG BEFORE PAINTING 4 -Paint Outside of Tube as per Dart QSI 005 4.2 BATCH: 5204428

210 - (QC14- Inspect Spray Paint) Then, Wrap in plastic bag to protect from scratches ***VERIFY BY _____ BATCH # TO MATCH W/O _____ ***VERIFY BY _____ PART # TO MATCH W/O _____

220 - (Crosstubes) *****LAY DOWN CROSSTUBE ON TABLE AND PUT DT10302 PINS IN SADDLE HOLE FACING UP, USE HOLE IN TAPE MEASURE TO PUT IN PINS FOR LOCATING CENTER OF CROSSTUBE. ***** 1- Abrade mating surfaces of support and crosstube with 180 grit sandpaper, clean the area with MEK or equivalent as per dwg 2- Install supports with Proseal 890 per D212-664-141b and QSI 015 A/R Proseal 890 Batch: 5176610

EXP: 19/10 PROSEAL CURE TIME 72 HOURS: Start: 19-4-1

Finish: 19-9-3 3- Install clamps with rubber cushion (ENSURE CLAMPS ARE INSTALLED ON TOP SIDE OF CROSSTUBE) using DT9565 as per Dwg D212-664-141b. ***Torque all clamps to 80-100 IN-LBS.***

230 - (QC5- Inspect part completeness to step on W/O) ***RE-CHECK TORQUE ON CLAMP AFTER PROSEAL HAS CURED FOR 72HOURS AS PER DWG.*** ***VERIFY BY _____ BATCH # TO MATCH W/O _____

***VERIFY BY _____ PART # TO MATCH W/O _____

240 - (Pick Kit)

250 - QC4- 100% Inspect kits for completeness) ***VERIFY BY _____ BATCH # TO MATCH W/O

***VERIFY BY _____ PART # TO MATCH W/O _____

260 - Identify and pack for shipping as per PPP D212-664-101B

265 - (Document Control) Photocopy bluefile and create labels as per PPP D212-664-101B CHG006

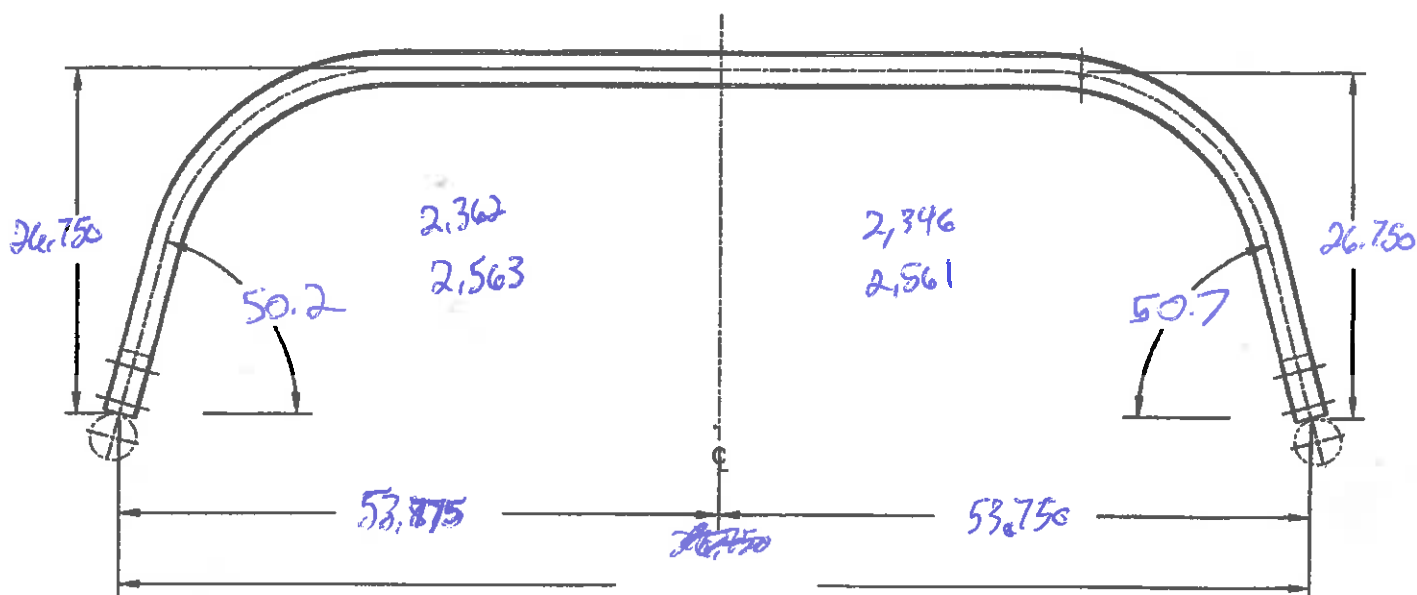
270 - (QC21- Final Inspection - Work Order Release)

Job BOM				
Part / Item	Component Name	Quantity	Operation	Container
D212-664-101TRN	Crosstube Turning Detail	1 pcs (1 ea)	110-Packaging 1 - Pick Kit	S184872
D3595-063-450	Rubber Cushion 0.63" Wide X 4.50" Long	4 pcs (4 ea)	220-Crosstubes - 4 - B4B	
D5017-1	Support, 214 Fwd	2 pcs (2 ea)	220-Crosstubes - 4 - B4B	
MS21920-25	Clamp	4 Ea (4 ea)	220-Crosstubes - 4 - B4B	
AN6-35A	Bolt	4 Ea (4 ea)	250-QC 4	PKG3-1B4B S184936 ✓
AN6-36A	Bolt	4 Ea (4 ea)	250-QC 4	PKG3-1B4B S157483 ✓
D3428-1	Placard	1 pcs (1 ea)	250-QC 4	PKG3-1B4B S112847 ✓
MS21042L6	Nut	6 Ea (6 ea)	250-QC 4	PKG3-1B4B S142495 ✓
NAS1149D0663J	Washer	18 Ea (18 ea)	250-QC 4	PKG3-1B4B S167525 ✓
041797 FRI 9-6-2019				
Job Allocations				
Operation	Component Part	Required	Inventory	Allocated
110-Packaging 1 - Pick Kit	D212-664-101TRN	1	4	0
220-Crosstubes - 4 - B4B	D3595-063-450	4 S176511	29	0
	D5017-1	2 S170644-C	7	0
	MS21920-25	4 S177736	103	0
250-QC 4	AN6-35A	4	31	0
	AN6-36A	4	25	0
	D3428-1	1	15	0
	MS21042L6	6	226	0
	NAS1149D0663J	18	534	0
Part Specifications				
Specifications could not be found.				

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DART AEROSPACE LTD	Work Order: 199355
Description: Crosstube High Fwd (205/212/412)	Part Number: D212-664-101
Inspection Dwg: D212-664-141 Rev: E	Page 1 of 1

Required Dimension	Min	Max
Height	26.67	27.17
1/2 Span	53.59	53.85
Angle	49	52
Total Span	107.18	107.7
Bending Passes	3	--
Crushing	--	7.2%



	Side A	Side B
Bending Passes		
Crushing	4.8%	4.9%
Comments		

QC15 Inspection	DAS
Date	68 AUG 21 2019

Rev	Date	Change	Revised by	Approved
A	07.02.06	New Issue	KJ/JM	
B	08.04.21	Dwg Rev updated	KJ/JM	
C	10.04.01	Dwg Rev updated	KJ	
D	12.04.16	Added bending, crushing dimensions	KJ	
E	14.07.28	Revised max crushing %	KJ	
F	16.01.15	Revised Height min/max dimensions	KJ	

Item	Qty -141	Qty -141B	Qty -141F	Part Number	Description
1	X			D212-664-141	CROSSTUBE ASSEMBLY (205212/412 HIGH FWD)
2		X		D212-664-141B	CROSSTUBE ASSEMBLY (214 HIGH FWD)
3			X	D212-664-141F	CROSSTUBE ASSEMBLY (205212/412 HIGH FWD) (ANODIZED)
4	1	1	1	D8005-128	CROSSTUBE
5	2	2	2	D2893-1	SUPPORT
6	4	4	4	D3665-083-450	RUBBER CUSHION
7		2	2	D8017-1	SUPPORT
8	4	4	4	MS21920-25	CLAMP (OR MS21920-26)
9	A/R	A/R	A/R	PROSEAL 880 B-2	SEALANT, AMS-S-8802 CLASS B-2

GENERAL NOTES:

- 1) MATERIAL: MANUFACTURED FROM D6005-128
FINISHED LENGTH = 128.514±0.020
- 2) FINISH -141 & -141B: a) CHEMICAL CONVERSION COAT PER DART QSI 005 4.1
b) PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2
c) MASK UNDERSIDE OF CROSSTUBE AS SHOWN (ZN C8-2 / C8-3, HATCHED AREA)
d) PAINT UNDERSIDE PER DART QSI 005 4.2
e) REMOVE MASKING AND APPLY MATTE CLEAR COAT
FINISH -141F: a) ANODIZE PER MIL-A-8825, TYPE II CLASS 1
b) ALODINE (DO NOT ETCH) PER QSI 005 4.1.2
c) PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2
d) MASK UNDERSIDE OF CROSSTUBE AS SHOWN (ZN C8-2 / C8-3, HATCHED AREA)
e) PAINT OUTSIDE PER DART QSI 005 4.2
f) REMOVE MASKING AND APPLY MATTE CLEAR COAT
- *NOTE: BETWEEN FINISHING OPERATIONS EXTREME CARE MUST BE TAKEN NOT TO CONTAMINATE OR DAMAGE FINISHED SURFACES.
- 3) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED.
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED.
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX.
- 6) IDENTIFICATION: SCRIBE DART PART NUMBER "D212-664-XXX" AND BATCH NUMBER ON INSIDE OF CUFF USING VIBRATING STYLUS
- 7) WEIGHT: D212-664-141F-141F = 33.8 lbs
- 8) PART IS SYMMETRIC ABOUT CENTERLINE
- 9) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.

MACHINING

- 10) RUN CUTTER OFF PART. BLEND OUT EDGE LONGITUDINALLY, TRANSITION SHOULD BE SMOOTH.
- BENDING
- 11) BEND PROGRESSIVELY WITH A MINIMUM OF 3 PASSES. MAXIMUM TUBE FLATTENING DUE TO BENDING IS 7.2% (BASED ON O.D.) IN LOWER HALF OF R86.5 BEND AND 8% (BASED ON O.D.) ON REMAINING TUBE.
- 12) LIQUID PENETRANT INSPECT OUTSIDE SURFACE OF CROSSTUBE PER QSI 038.

ASSEMBLY

- 13) TO INSTALL D2893-1 / D8017-1 SUPPORT: ABRASE MATING SURFACE OF SUPPORT AND CROSSTUBE WITH 180-GRIT SANDPAPER AND REMOVE RESIDUE WITH MEK (OR EQUIVALENT). APPLY A 0.04" TO 0.07" THICK LAYER OF PROSEAL 880 CLASS B-2 (OR AMS-S-8802 CLASS B-2) SEALANT TO MATING SURFACE OF SUPPORT.
- 14) INSTALL MS21920-25 CLAMPS (OR -26) WITH D3665-083-450 RUBBER CUSHIONS TO SECURE THE SUPPORT ON TOP SIDE OF THE CROSSTUBE. ENSURE CLAMPS ARE ON TOP SIDE OF CROSSTUBE.
- 15) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING. PRIOR TO PACKAGING, RE-CHECK TORQUE ON CLAMPS AFTER PROSEAL 880 SEALANT HAS CURED FOR 72 HOURS.

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SUBJECT TO AMENDMENT
WITHOUT NOTICE
WORK ORDER
NO. 15935

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19-08-20

RELEASED
2014-05-26
JND

E	ADD -141F. D8017-1 WAS D2893-1 (-141B). PROSEAL WAS MAGNOSOL. NOTE 2: ADD INSPECTION WINDOW, NOTE 11: ALLOW 7.2% CRUSH, NOTE 16: ADD 72-HR CURE AND RETORQUE FOR PROSEAL. ADD SHEET 3. CLAMPS REVERSED TO PREVENT CHIPPING (B7-2, B7-3). BEND HEIGHT TOL. NOW 0.28 WAS 0.13 (C1-3). IN CORR. DED D-1/2-3	CP	14.04.01
D	REFORMAT/REVISE GENERAL NOTES/PART LIST. REORGANIZED VIEWS AND REFORMATTED DRAWING TO CURRENT STANDARDS: ADD -141B (ZN B4-2, D4-2); REMOVED REF & ADD TOLERANCES (ZN B4-3, C8-3 & B5-3); RELOCATED FLAG #6 PER PAR 06-046 (ZN A8-3); MOVED TURNING DETAIL & UPDATED TOLERANCE TO SHEET 4	RF	06.08.30
C	REMOVE -881 ABRASION STRIP; ADD MAGNOSOL D3665 CUSHION, REVERSE CLAMPS	PH	07.03.08
B	ADD HOLES FOR COMPATIBILITY WITH BRITAA SKIDTUBES	PH	06.02.04
A	NEW ISSUE	CP	06.12.12
REV.	DESCRIPTION	BY	DATE
DRAWN	DART AEROSPACE LTD		
CHECKED	DART AEROSPACE LTD		
MFG. APPR.	D212-664-141		
APPROVED	DRAWING NO.		
DE APPR.	TITLE		
DATE	XTUBE ASSY (205212/412 HI FWD)		
	SCALE		
	NTS		

14.04.01
DART AEROSPACE LTD
HARRISBURT, ONTARIO, CANADA
SHEET 1 OF 8
REV. E
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1 2 3 4 5 6 7 8

13 14 15
 D5017-1 SUPPORT
 MS21920-25 CLAMP, 2X
 D3595-083-450 RUBBER CUSHION, 2X
 2 PL

E

G

D212-884-501
 BENT TUBE

2.0
 1.0

MASK AREA PRIOR TO PAINTING,
 REMOVE MASKING AFTER PAINT
 AND APPLY CLEAR COAT

E

2.0

Q
 SYM

D212-884-141B
 ASSEMBLY DETAIL

MS21920-25
 CLAMP, REF
 13 14 15

E

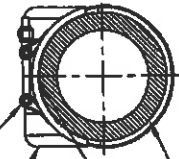
D5017-1
 SUPPORT, REF

E

13
 APPLY PROBEAL
 BETWEEN D5017-1 AND
 CROSS TUBE

E

D3595-083-450
 RUBBER CUSHION
 UNDER CLAMP, REF



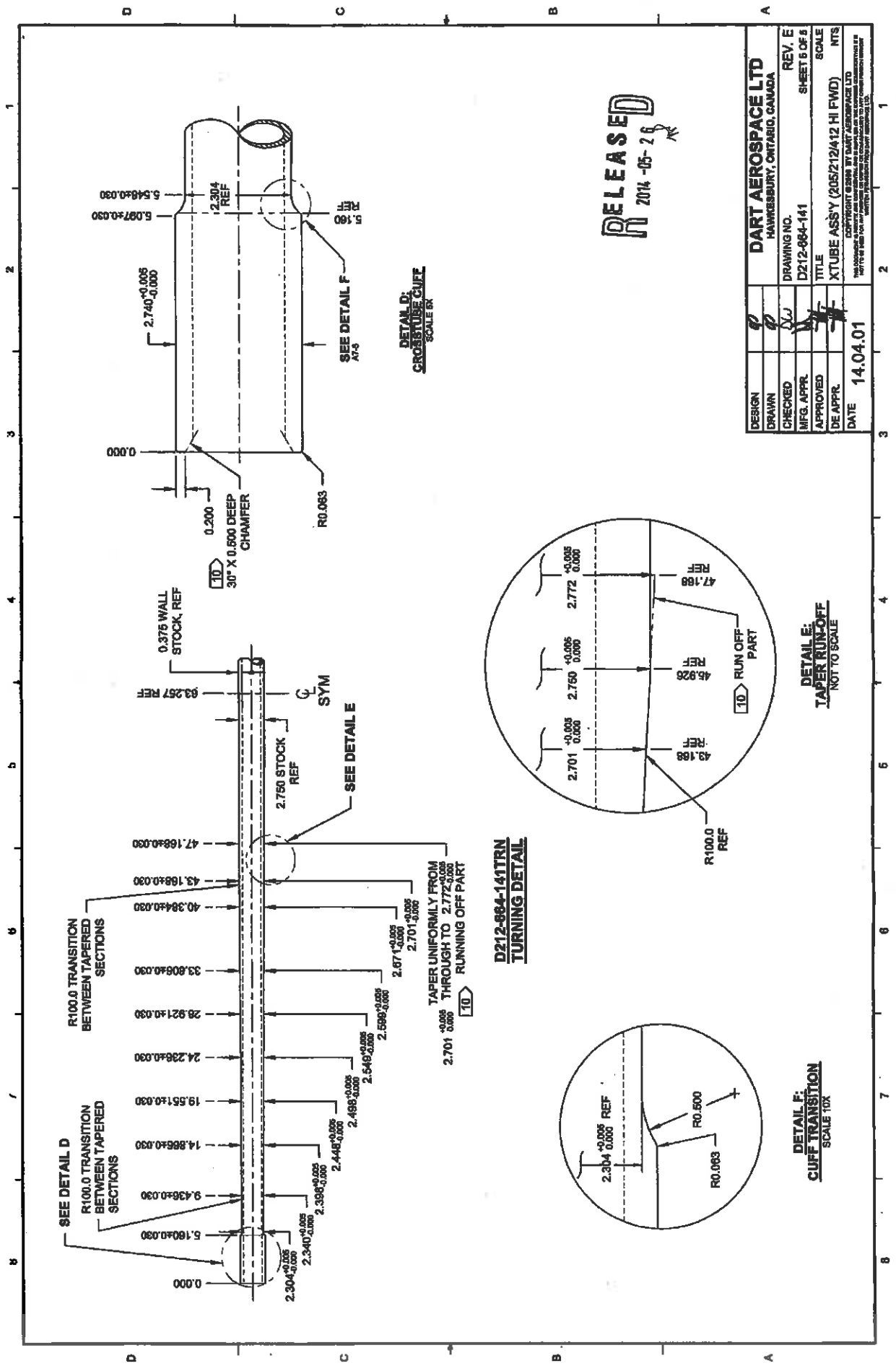
SECTION G-G
 SCALE 4X

RELEASED
 R 2014-05-26

DESIGN		DART AEROSPACE LTD	REV. E
DRAWN		HAWKSBURY, ONTARIO, CANADA	
CHECKED		DRAWING NO.	SHEET 3 OF 8
MFG. APPR.		D212-884-141	SCALE
APPROVED		TITLE	NTS
DE APPR.		XTUBE ASSY (205/212/412 HI FWD)	
DATE	14.04.01		

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1 2 3 4 5 6 7 8



SEE DETAIL D
R100.0 TRANSITION
BETWEEN TAPERED
SECTIONS

R100.0 TRANSITION
BETWEEN TAPERED
SECTIONS

TAPER UNIFORMLY FROM
2.701 ± 0.005 THROUGH TO 2.772 ± 0.005
RUNNING OFF PART

D212-884-141TRN
TURNING DETAIL

DETAIL F:
CUFF TRANSITION
SCALE 10X

DETAIL E:
TAPER RUN-OFF
NOT TO SCALE

DETAIL D:
CROSS-TUBE CUFF
SCALE 8X

RELEASED
N 2014-05-28

DESIGN	0	DART AEROSPACE LTD	REV. E
DRAWN	0	HAWKESBURY, ONTARIO, CANADA	
CHECKED	0	DRAWING NO.	SHEET 6 OF 8
MFG. APPR.	0	D212-884-141	SCALE
DE APPR.	0	TITLE	NTS
DATE	14.04.01	XTUBE ASS'Y (205/212/412 HI FWD)	

Entered: _____ Date: _____

WORK ORDER NON-CONFORMANCE / ROUTE UPDATE

NCR No. _____

Route update only ☐



Job: _____ Part No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐		DEPARTMENT/PROCESS Skid-tube ☐ Eng. (Non-AW) ☐ Engineering ☐ Machining ☐ Prod. Eng. Coord. ☐ Water Jet ☐ Large Fab ☐ Rec/Store/Packaging ☐ Supplier ☐ Finishing ☐ Quality ☐				Date: _____ Sequence #: _____		QTY Affected: _____		MRB (QS1042)																													
Description Work Order Deviation				Disposition				Completed By		Lead hand / Supervisor		QC / QA Coordinator																													
Root Cause Operator ☐ Manufacturing Process ☐ Equip/Tooling ☐ Handling/Preservation ☐ Material ☐ Product Improvement ☐ Process Improvement ☐ Human Factors ☐				FAULT CATEGORY <table border="1"> <tr> <td>Pressure/Forced</td> <td>Contamination</td> <td>Power Loss/Surge</td> <td>Positioned Wrong</td> </tr> <tr> <td>Bending</td> <td>Misaligned/off center</td> <td>Folio/Program</td> <td>Outside Tolerance</td> </tr> <tr> <td>Crushing</td> <td>BOM/Route</td> <td>Grain Direction</td> <td>Drawing</td> </tr> <tr> <td>Cracks</td> <td>Broken/Damage/Defect</td> <td>Weld</td> <td>Finish</td> </tr> <tr> <td>Crimp/Kink/Ripple/Wave/Twist</td> <td>Incomplete/Unclear Instructions</td> <td>Wrong Stock Pulled</td> <td>Part Lost/Missing</td> </tr> <tr> <td>Marks/Chatter</td> <td>Drill Holes</td> <td>Out of Sequence</td> <td>Misread</td> </tr> <tr> <td>Mislabeled</td> <td>Fit/Function</td> <td>Off-set/Set-up</td> <td></td> </tr> </table>								Pressure/Forced	Contamination	Power Loss/Surge	Positioned Wrong	Bending	Misaligned/off center	Folio/Program	Outside Tolerance	Crushing	BOM/Route	Grain Direction	Drawing	Cracks	Broken/Damage/Defect	Weld	Finish	Crimp/Kink/Ripple/Wave/Twist	Incomplete/Unclear Instructions	Wrong Stock Pulled	Part Lost/Missing	Marks/Chatter	Drill Holes	Out of Sequence	Misread	Mislabeled	Fit/Function	Off-set/Set-up		Other/Details:	
Pressure/Forced	Contamination	Power Loss/Surge	Positioned Wrong																																						
Bending	Misaligned/off center	Folio/Program	Outside Tolerance																																						
Crushing	BOM/Route	Grain Direction	Drawing																																						
Cracks	Broken/Damage/Defect	Weld	Finish																																						
Crimp/Kink/Ripple/Wave/Twist	Incomplete/Unclear Instructions	Wrong Stock Pulled	Part Lost/Missing																																						
Marks/Chatter	Drill Holes	Out of Sequence	Misread																																						
Mislabeled	Fit/Function	Off-set/Set-up																																							



Dart Aerospace Ltd.
1270 Aberdeen St
Hawkesbury, ON
K6A 1K7
Canada

Tel (613) 632-5200

PURCHASE ORDER

POHB044352



Supplier: SKY002-VC
Skyservice
6120 Midfield Road
Mississauga
ON
L5P 1B1 Canada
Phone: 905-678-5636
Fax: 905-678-5841

Attention: Jenne, Heather

Ship To: 1270 Aberdeen Street
Hawkesbury
ON
K6A 1K7 Canada
Phone: 613-632-5200

PO No: POHB044352
PO Date: 8/26/19
Due Date: 8/28/19
Purchase Order Revision:
Revision Date:
Ship-To Contact: Guerin, Kimberley
Phone: 613-632-5200 Ext: 298
kguerin@dartaero.com

Via: Ground
Pynt Terms: Net 30
Freight Terms:
Special Comments:

Items

Line Item	Job	Part	Description	Status	Account	Due Date	Order Quantity	Received Quantity	Balance	Unit Price (CAD)	Extended Price
1	198971	D212-664-201	Aft Crosstube - High : TC STC SH01-9 Issue 3, FAA STC SR01298NY 09/01/08, EASA STC EASA.IM.R.S.01304 07/03/06, DGAC MEXICO STC IA-316/2015 15/06/17 ***WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE.*** Issue P/O: LIQUID PENETRANT INSPECTION AS PER QSI 038 OR LPI AS PER ASTM 1417 LEVEL 2	Firmed	-	8/28/19	1 pcs	0 pcs	1 pcs	\$140.7142/pcs	\$140.71
	198972	1	X AUG 28 2019	Firmed	-	8/28/19	1 pcs	0 pcs	1 pcs	\$140.7142/pcs	\$140.71
	198974	1	X AUG 28 2019	Firmed	-	8/28/19	1 pcs	0 pcs	1 pcs	\$140.7142/pcs	\$140.71
	198976	1	X AUG 28 2019	Firmed	-	8/28/19	1 pcs	0 pcs	1 pcs	\$140.7142/pcs	\$140.71
	198979	1	X AUG 28 2019	Firmed	-	8/28/19	1 pcs	0 pcs	1 pcs	\$140.7142/pcs	\$140.71
Sub Total:							5	0	5		\$703.57



Dart Aerospace Ltd.
1270 Aberdeen St
Hawkesbury, ON
K6A 1K7
Canada

Tel (613) 632-5200

PURCHASE ORDER

POHB044352



Items

Line Item	Job	Part	Description	Status	Account	Due Date	Order Quantity	Received Quantity	Balance	Unit Price (CAD)	Extended Price
2	199335	D212-664-101B	Fwd Crosstube - High : TC STC SH01-9 Issue 3, FAA STC SR01298NY 09/01/08, EASA STC EASA.IM.R.S.01304 07/03/06, DGAC MEXICO STC IA-316/2015 15/06/17 (Outsource process - NDT per QSI038 4.1) *** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE*** Liquid Penetrant Inspection as per QSI 038 Issue P/O: _____ LPI as per ASTM 1417 Level 2 Attach copy of NDT results to work order	Firmed	-	8/28/19	1 pcs	0 pcs	1 pcs	\$140.7142/pcs	\$140.71
3	199277	D212-664-201B	Aft Crosstube - High : TC STC SH01-9 Issue 3, FAA STC SR01298NY 09/01/08, EASA STC EASA.IM.R.S.01304 07/03/06, DGAC MEXICO STC IA-316/2015 15/06/17 (Outsource process - NDT per QSI038 4.1) *** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE*** Liquid Penetrant Inspection as per QSI 038 Issue P/O: _____ LPI as per ASTM 1417 Level 2 Attach copy of NDT results to work order	Firmed	-	8/28/19	1 pcs	0 pcs	1 pcs	\$140.7142/pcs	\$140.71
Grand Total:											\$985.00

Order Notes

Procurement Quality Clauses
A005 right of entry
A012 chemical and physical test report
A016 personnel qualification
A017 raw material identification (as applicable)

A022 Apical Processing
A024 process certifications
A026 certification of material conformance

A041 quality management system
A042 dart notification by supplier
A043 retention of quality documents

A048 counterfeit parts avoidance, detection, mitigation and disposition program

A049 supplier awareness

Terms & Condition of Purchasing(Suppliers) and Procurement Quality Clauses are an integral part of our AS9100 requirements. To learn in detail, please visit www.dartaerospace.com for further explanation.

Plex 8/28/19 2:38 PM Dart.Guerin.Kimberley

**skyservice****Work Order Traveler**
Sky Service F.B.O. Inc.

10105 Ryan Avenue, Dorval, Quebec, H9P 1A2

TCCA AMO 53-89 / EASA 145.7142 / BDA AMO 385

WO #: MWO41555	Customer: Dart Aerospace Ltd.	Dept: NDT YUL	Reference: POHB044352 ✓
Descr:	PN:	S/N:	Qty: 1
Make:	Model:	Reg:	A/C S/N:
TSN:	CSN:	TSO:	
Task: UNSCHEDULED			Sequence: 1

Work Required:**CARRY OUT NDT ON:**

- ✓ 5 AFT CROSSTUBES, P/N: D212-664-201, J/S: 198971, 198972, 198974, 198976, 198979
- ✓ 1 AFT CROSSTUBE, P/N: D212-664-201B, J/S: 199277
- ✓ 1 FWD CROSSTUBE, P/N D212-664-101B, J/S: 199335

DAS
68
9-89

Action Taken:						Date:	Initial/Stamp:
LPI C/O IAW ASTM E-1417M-16						AUG 28 2019	 
NO CRACK FOUND							
PEN. ZL-56, MPO13600, CLEANER SKC-S MPO13923, DEV. MPO11715, UV LIGHT M-20142							
Description	Location	P/N	Qty	Batch	S/N Off	S/N On	

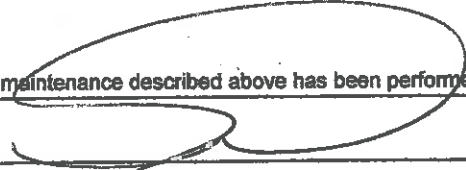
In house

RECEIVED

AUG 28 2019

DART AEROSPACE LTD.

I certified that the maintenance described above has been performed in accordance with the applicable standard of airworthiness.

Signature: 	ACA/SCA Stamp 	Date: AUG 28 2019
Name: RAFIN MELIKIAN		

SKYM002-1 REV 5 Apr/17

5.0 PARTS LIST

5.1 HIGH GEAR CROSSTUBES

Item	QTY -101	QTY -201	QTY -203	Part Number	Description
	X			D212-664-101	CROSSTUBE INSTALLATION, 204/205/210/212/214/412, UH-1H, UH-1A/B/E/F/L/P, TH-1F/L, HH-1K HIGH FWD
		X		D212-664-201	CROSSTUBE INSTALLATION, 204/205/210/212/214, UH-1H, UH-1A/B/E/F/L/P, TH-1F/L, HH-1K HIGH AFT
			X	D412-664-203	CROSSTUBE INSTALLATION, 412 HIGH AFT
1	1			D212-664-141	CROSSTUBE ASSEMBLY, 204/205/210/212/214/412, UH-1H, UH-1A/B/E/F/L/P, TH-1F/L, HH-1K HIGH FWD
2		1		D212-664-241	CROSSTUBE ASSEMBLY, 204/205/210/212/214, UH-1H, UH-1A/B/E/F/L/P, TH-1F/L, HH-1K HIGH AFT
3			1	D412-664-243	CROSSTUBE ASSEMBLY, 412 HIGH AFT
10	2			* D2893-1	SUPPORT
11	4			* D3595-063-450	RUBBER CUSHION
12	4			* MS21920-25	CLAMP (OR MS21920-26)
13	4			AN6-35A	BOLT
14	4			AN6-36A	BOLT
15	6			MS21042L6	NUT (OR MS21042-6)
16	18			AN960JD616	WASHER
20		2		* D2940-1	SUPPORT
21		4		* D3595-063-530	RUBBER CUSHION
22		4		* MS21920-28	CLAMP (OR MS21920-30)
23		4		AN6-40A	BOLT
24		2		AN6-41A	BOLT
25		6		MS21042L6	NUT (OR MS21042-6)
26		18		AN960JD616	WASHER
30			1	* D2896-1	SUPPORT
32			2	* D3595-063-570	RUBBER CUSHION
33			4	* MS21920-28	CLAMP
34			2	* MS21920-30	CLAMP (OR MS21920-32)
35			4	AN6-40A	BOLT
36			2	AN6-41A	BOLT
37			6	MS21042L6	NUT (OR MS21042-6)
38			18	AN960JD616	WASHER
39			2	* D3189-1	CHAFING SHIELD
50	1	1		D3428-1	PLACARD

* REFERENCE ONLY. PARTS ARE INCLUDED IN D212-664-141/-241 OR D412-664-243 ASSEMBLIES ABOVE.

NOTE: KITS INCLUDE EXTRA HARDWARE FOR COMPATIBILITY WITH BOTH DART AND BELL/AAI SKIDTUBES.

5.5 214B/B-1 CROSSTUBES

The following crosstube installations are available from Dart for the 214B/B-1 model aircraft:

QTY -101B	QTY -107B	QTY -201B	QTY -207B	Part Number	Description	Equivalent 204/205/212 Kit
X				D212-664-101B	CROSSTUBE INSTALLATION, 214 HIGH FWD	D212-664-101
	X			D212-664-107B	CROSSTUBE INSTALLATION, 214 STANDARD FWD	D212-664-107
		X		D212-664-201B	CROSSTUBE INSTALLATION, 214 HIGH AFT	D212-664-201
			X	D212-664-207B	CROSSTUBE INSTALLATION, 214 STANDARD AFT	D212-664-207
1				D212-664-141B	CROSSTUBE ASSEMBLY, 214 HIGH FWD	D212-664-141
	1			D212-664-147B	CROSSTUBE ASSEMBLY, 214 STD FWD	D212-664-147
		1		D212-664-241B	CROSSTUBE ASSEMBLY, 214 HIGH AFT	D212-664-241
			1	D212-664-247B	CROSSTUBE ASSEMBLY, 214 STD FWD	D212-664-247
2	2			*D5017-1	SUPPORT, 214 FWD	D2893-1
		2	2	*D5018-1	SUPPORT, 214 AFT	D2940-1

* REFERENCE ONLY. PARTS ARE INCLUDED IN D212-664-141B/-147B/-241B/-247B ASSEMBLIES ABOVE.

The D212-664-101B/-107B/-201B/-207B are the same as the equivalent crosstubes listed in the table above. However, the spacing of the supports is narrower to accommodate 214 model aircraft, as illustrated in Figure 3-11 of these instructions. Additionally the D5017-1 and D5018-1 supports are designed to eliminate interference with the 214 cap assemblies. The kits are otherwise installed, maintained, and have identical replacement parts lists per their equivalent crosstube. All statements in FMS-D214-664 that apply to the D212-664-101/-107/-201/-207 crosstubes are also applicable to D212-664-101B/-107B/-201B/-207B crosstubes.

Note that Dart D212-664-101/-107/-201/-207 crosstubes may also be installed on 214B/B-1 model aircraft. To install on 214 aircraft, the supports on the -101/-107/-201/-207 crosstubes must be repositioned per the support removal/installation instructions of ICA-D212-664 (section 32.3 and section 32.4 of rev. 8 or later revision) using 13.75" spacing (REF). It is also recommended that the D2893-1 and/or D2940-1 supports be replaced with D5017-1 and D5018-1 supports respectively.

Likewise, Dart D212-664-101B/-107B/-201B/-207B may be installed on 204/205/210/412/UH-1 model aircraft. To install on 204/205/210/412/UH-1 aircraft, the supports on the -101B/-107B/-201B/-207B crosstubes must be repositioned per the support removal/installation instructions of ICA-D212-664 (section 32.3 and section 32.4 of rev. 8 or later revision) using 14.00" spacing (REF). It is also recommended that the D5017-1 and D5018-1 supports be replaced with D2893-1 and D2940-1 supports respectively.

Change Record

Part Number: D212-664-101B

PAGE 1 OF 1

Description: CROSSTUBE INSTALLATION, HIGH FWD

[illegible]